

SOV/129-59-4-8/17

AUTHORS: Kurtepov M.M. (Candidate of Technical Sciences) and
Gryaznova, A.S. (Engineer)

TITLE: Corrosion of Welded Joints of Stainless Steels in Acidic
Solutions (Korroziya svarnykh soyedineniy
nerzhaveyushchikh staley v kislykh rastvorakh)

PERIODICAL: Metallovedeniye i Termicheskaya Obrabotka Metallov,
1959, Nr 4, pp 41-44 (USSR)

ABSTRACT: The authors studied the influence of various heat
treatment regimes on the corrosion resistance of welded
joints of the steel 1Kh18N9T produced by argon arc
welding. The following heat treatment regimes were
applied: quenching from 1050°C in water; stabilization
at 850°C for 3 hours followed by cooling in air. For
comparison the same experiments were also carried out
with non-heat-treated steel. On the basis of the
obtained results the authors arrived at the following
conclusions: 1) Heat treatment has a great influence
on the corrosion properties of welded joints. Joints
which had not been heat-treated or hardened had higher
resistance to corrosion than joints which had been heat-
treated or hardened. For all the investigated types of

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Corrosion of Welded Joints of Stainless Steels in Acidic Solutions

heat treatment, short-duration tempering brought about a considerable increase in the total corrosion speed. Stabilization annealing reduces the total corrosion stability of welded joints but in spite of that it is a useful heat treatment in the case of subsequent short-duration tempering in the dangerous temperature range.

2) Welded joints are liable to be affected by concentrated intercrystallite corrosion in the fusion zone. The deepest corrosion is observed in welded joints which

have been subjected to a repeated short-duration heating (650°C, 2 hours). 3) In acidic oxidizing solutions an

increase of the total speed of corrosion of welded joints is observed for welds which are stabilized with titanium. The metal of a weld joint which has been

stabilized with titanium, as well as that of welds not stabilized with titanium, is liable to intercrystallite

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Corrosion of Welded Joints of Stainless Steels in Acidic Solutions
corrosion of equal intensity after repeated short-
duration heating.
There are 2 figures, 2 tables and 8 references, of which
6 are Soviet and 2 English.

ASSOCIATION: Institut Fizicheskoy Khimii (Institute of Physical
Chemistry)

Card 3/3

MIROLYUBOV, Ye.N.; KURTEPOV, M.M.; TOMASHOV, N.D.

Method of obtaining anodic polarization curves with the help
of cathodic polarization. Trudy Inst.fiz.khim. no.7:51-53
'59. (MIRA 13:5)

(Polarization (Electricity))
(Cathodic protection)

BOZIN, N.A.; KURTEPOV, M.M.

Electrochemical method of rapid evaluation of corrosion
resistance in metals. Trudy Inst.fiz.khim. no.7:54-59 '59.
(MIRA 13:5)

(Electrochemical analysis)

5 (4)

AUTHORS:

Mirolubov, Ye. N., Kurtepov, M. M.,
Tomashov, N. D.

SOV/20-125-6-32/61

TITLE:

On Some Particular Features of the Cathode Process on
Stainless Steel in Solutions of Nitric Acid (O nekotorykh
osobennostyakh katodnogo protsesssa na nerzhavayushchikh
stalyakh v rastvorakh azotnoy kisloty)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6,
pp 1288-1291 (USSR)

ABSTRACT:

The processes mentioned in the title were investigated by
plotting cathode-polarization curves (Fig 1). Investigations
were carried out for chromium- and chromenickel steels
containing niobium, and, for comparison, a platinum electrode.
The dependence of corrosion on the potential is shown by
figure 2. The following was found: The maximum current
depends on the composition of the electrode; overvoltage in
the cathode process is lower in the case of steel than in
that of platinum. These phenomena are explained by a
disturbance of passivation as a result of cathodic polarization
followed by the formation of nitrous acid (as autocatalyst)
by the reducing effect exercised by the substances removed

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On Some Particular Features of the Cathode Process on SOV/20-125-6-32/61
Stainless Steel in Solutions of Nitric Acid

from the steel upon the nitric acid. There are 2 figures and
11 references, 5 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute
for Physical Chemistry of the Academy of Sciences, USSR)

PRESENTED: January 24, 1959, by A. M. Frumkin, Academician

SUBMITTED: January 24, 1959

Card 2/2

20012

18 8300 also 2708

S/137/61/000/002/013/046
A006/A001

Translation from: Referativnyy zhurnal, Metallurgiya, 1961, No. 2, p. 9, # 2B66

AUTHOR: Medovar, B.I., Langer, N.A., Kurtepov, M.M.

TITLE: Intercrystalline Corrosion Concentrated Along the Fusion Line in Weld Joints of Stabilized 18-18 Type Steels (Edge-Corrosion)

PERIODICAL: V sb.: "Mezhkristallitn. korroziya i korroziya metallov v napryazh. sostoyanii", Moscow, Mashgiz, 1960, pp. 59 - 70

TEXT: The basic cause for the formation of edge corrosion in weld joints of 1X18H9T (1Kh18N9T), 1X18H12M2T (1Kh18N12M2T) and X18H11B (Kh18N11B) steels, is the dissolving of Ti or Nb+Ta carbides in the austenite, resulting from the heating up of the base metal to $> 1,300^{\circ}\text{C}$ and the subsequent singling out of Cr carbides along the austenitic grain boundaries. The singling out of carbides and the impoverishment of boundary areas of Cr-austenite takes place either during slow cooling or at repeated heating up to the seam-adjacent zone to $> 650^{\circ}\text{C}$. To

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S/137/61/000/002/013/046
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X

Intercrystalline Corrosion Concentrated Along the Fusion Line in Weld Joints of Stabilized 18-18 Type Steels (Edge-Corrosion)

prevent edge corrosion, it is necessary to raise the Ti content and the Nb+Ta content in stainless steel; to use low-carbon 18-18 type steels; not to arrange the seams close to each other, in order to prevent secondary heat effects on the seam-adjacent metal; to treat the welds by stabilizing annealing. There are 23 references.

Yu. S.

Translator's note: This is the full translation of the original Russian abstract.

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Kurtepov, M. M.

81931
S/062760/000/06/02/011
B020/B061

188300

AUTHORS: Mirolubov, Ye. N., Kurtepov, M. M., Tomashov, N. D.

TITLE: The Study of the Corrosion- and Electrochemical Behavior of Stainless Steels by Cathodic Polarization in Nitric Acid Solutions. I. The Characteristics of the Self-dissolution of Steels

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 6, pp. 1015-1021

TEXT: The above investigation was carried out by the authors so that they could subsequently examine the processes in stable, passive state, on its disturbance, and in active state on stainless steels. The possibility of the disturbance of the passive state and the successive formation of a cathodic electrochemical protective effect under the conditions examined, has previously been shown by the authors (Ref. 4). The disturbance of the passive state of stainless steels and their obtention in active state in nitric acid solutions were effected out with the aid of cathodic polariza- *X*

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The Study of the Corrosion- and Electrochemical
 Behavior of Stainless Steels by Cathodic
 Polarization in Nitric Acid Solutions. I. The
 Characteristics of the Self-dissolution of Steels

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S062/60/000/06/02/011
 B020/B061

tion with an external current source. The determination of the relationship between the rate of corrosion and the potential and the cathodic polarization curves received the most attention. These dependences were obtained with the aid of the polarization of the samples by current with known intensity, adapted to each sample. The dependence of the rate of corrosion, calculated on the basis of the loss in weight, and the density of the polarization current on the potential, was determined on the basis of the established loss in weight of the steel samples and the average values of the potential during the test with each given polarization current density. These dependences represent the anodic and cathodic polarization curves. All potential values are converted to the hydrogen scale, with consideration of the diffusion potentials. Known stainless structural steels were used as test pieces in the shape of cylindrical samples. The chemical composition and the structure of the steels corresponded to the standard POCT-5632-50 (GOST 5632-50). Fig. 1 gives a typical dependence between the rate of corrosion of stainless steels on cathodic polarization

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The Study of the Corrosion- and Electrochemical Behavior of Stainless Steels by Cathodic Polarization in Nitric Acid Solutions. I. The Characteristics of the Self-dissolution of Steels

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B020/B061

in nitric acid solutions and the potential. Fig. 2 shows the dependence of the rate of corrosion of the steel 1X18N11B (1Kh18N11B) on the potential in nitric acid solution at 20°, Fig. 3, the dependence of the rate of corrosion of the stainless steel 1Kh18N11B, polarized to a certain potential, on the concentration of nitric acid at 20°, Fig. 4, the dependence of the active participation of the surface of the steel 1Kh18N11B at a potential of -0.1 v at 20° on the concentration of nitric acid, Fig. 5, the dependence of the anodic polarizability of the steel 1Kh18N11B in active state on the concentration of nitric acid at 20°, Fig. 6, the dependence of the rate of corrosion of iron and the steel 1X13 (1Kh13) on the potential in 3% nitric and sulfuric acid solutions, and Fig. 7 the dependence of the rate of corrosion of the steel 1Kh18N11B on the potential in 3% nitric acid at various temperatures. The temperature coefficients of the rate of corrosion of the steel 1Kh18N11B in 3% HNO₃ at various potentials (Table 1), and at $\varphi = 0.1$ v in nitric acid solutions (Table 2), are given. The self-dissolution process of

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The Study of the Corrosion- and Electrochemical Behavior of Stainless Steels by Cathodic Polarization in Nitric Acid Solutions. I. The Characteristics of the Self-dissolution of Steels

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B020/B061

stainless steels on cathodic polarization is decelerated by the diffusion due to slower feeding of the acid to the surface of the steel. There are 7 figures, 2 tables, and 14 references: 10 Soviet, 1 British and 3 German. /

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

SUBMITTED: December 24, 1958

Card 4/4

FOKIN, M.N.; KURTEPOV, M.M.; ZHURAVLEV, V.K.; VINOGRADOV, A.F.

Electronic potentiostat and its use in developing the structural corrosion of stainless steels. Zav.lab. 26 no.2:219-223
'60. (MIRA 13:5)

1. Institut fizicheskoy khimii Akademii nauk SSSR.
(Steel--Corrosion)
(Potentiometric analysis)

88710

S/076/61/035/001/009/022
B004/B060

18.8300 1454.1573

AUTHORS: Bozin, N. A and Kurtepov, M. M. (Moscow)

TITLE: Effect of chromium and nickel in stainless steels upon the limits of stable passivity

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 1, 1961, 152-157

TEXT: It is stated by way of introduction that when determining the stability against corrosion of steels, it is important not only to determine their state, but also the conditions relative to the passage from the passive to the active state, and also the effect produced by the various components. The usual galvanostatic method does not permit a determination of the electrochemical behavior in the passive region. The function $V = f(I)$ was therefore determined potentiostatically. It was thus possible to determine the limits of the stable passivity, the current density, at which the steel dissociated, and the electrochemical behavior of the steel in the region of transition. Steels with different Cr and Ni contents were examined in 12 N H₂SO₄ at 20-100°C: X15H23M3A3 (Kh15N23M3D3), X19H23M3A3 (Kh19N23M3D3), X27H23M3A3 (Kh27N23M3D3),

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S/076/61/035/001/009/022
B004/B060

Effect of chromium and nickel ...

X9H15M3A3 (Kh9N15M3D3), X9H19M3A3 (Kh9N19M3D3), and X9H28M3A3 (Kh9N28M3D3). Fig. 2 shows the potentiostatic polarization curves of steels with different Cr contents at 100°C. Fig. 3 shows the effect of the Cr content upon the passivation potential V_p and the activation potential V_a for $i = 0.2 \text{ ma/cm}^2$ as a function of the chromium content at a content of 23% Ni, 3% Mo, and 3% Cu. Fig. 4 shows the potentiostatic curves as a function of the nickel content at 60°C. The following results were obtained: With rising Cr and Ni contents the potential region of stable passivity is increased. An increase of Ni content causes a reduction of the dissociation rate. Nickel increases the relative nobility of steel in that it shifts the potential of passivation in a positive direction. By contrast, Cr reduces the nobility by an opposite shift of the passivation potential. The region of passivity is reduced with a rise of temperature. By the potentiostatic method it is thus possible to take an appropriate choice of corrosion-resistant material, and to study the mechanism of passivation as well as the nature of the passive state. There are 5 figures and 3 Soviet-bloc references.

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S/076/61/035/001/009/022
B004/B060

. Effect of chromium and nickel ...

ASSOCIATION: Akademiya nauk SSSR. Institut fizicheskoy khimii
(Academy of Sciences USSR. Institute of Physical Chemistry)

SUBMITTED: May 6, 1959

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18.11.30

S/020/60/135/004/031/037
B004/B056

AUTHORS: Kurtepov, M. M., and Gryaznova, A. S.

TITLE: Effect of Metal Ions Upon Corrosion of Stainless Steel
in Concentrated HNO_3 Solutions

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 4,
pp. 899 - 901

TEXT: The present paper describes an investigation on the disturbance of the passive state of stainless steel in solutions with high oxidation reduction potentials and in the presence of metal ions of variable valency. Experiments were made with hardened 1X18H9T (1Kh18N9T) type steel in boiling 12 - 16 N HNO_3 to which nitrates or $\text{K}_2\text{Cr}_2\text{O}_7$ were added. Presence of Cr^{3+} ions raised steel corrosion. It increases with increasing concentration in HNO_3 , Cr^{3+} and with the time of contact between steel and solution. Potential shifts toward positive values which permit corro-

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89026

Effect of Metal Ions Upon Corrosion of Stainless Steel in Concentrated HNO_3 Solutions S/020/60/135/004/031/037
B004/B056

sion by overpassivation. The effect of Cr^{3+} is explained by the formation of higher chromium oxides (Cr^{6+}) having a depolarizing effect. The same was observed when difficultly soluble Cr_2O_3 was added. Fe^{3+} dissolving by corrosion accelerates corrosion, too. Addition of MnC_4^- raises corrosion already at low temperatures. Mn^{2+} added to cold HNO_3 has no corrosive effect. However, the latter occurs in boiling HNO_3 , due to the formation of manganese ions of higher valency. Ni^{2+} ions, on the other hand, retard the cathodic process and thus decrease the rate of corrosion. According to these observations, corrosion of stainless steel in boiling nitric acid is caused by the presence of metal ions of variable valency (Cr, Mn, Fe). There are 4 figures and 10 references: 6 Soviet, 3 US, and 1 French.

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L 14936-63
JD/ES/WB/DM

EPF(n)-2/ENP(q)/EWT(m)/BDS AFFTC/ASD/AFWL/SSD Pu-4

ACCESSION NR: AP3003974

S/0089/63/015/001/0037/0048

AUTHORS: Kurtepov, M. M.; Mirolubov, Ye. N. 66

TITLE: Corrosive attack of solvents of heat-evolving elements on construction material. 16

SOURCE: Atomnaya energiya, v. 15, no. 1, 1963, 37-48

TOPIC TAGS: corrosion resistance, dissolution reactor, construction material, nitric acid, sulfuric acid, hydrofluoric acid, electrochemistry, heat-evolving element

ABSTRACT: The corrosion resistance of construction materials¹⁹ in boiling solutions of nitric, sulfuric, and hydrofluoric acids, as well as nitric acid with addition of fluorides, with respect to the process of exothermic dissolution of elements is discussed. Data concerning the nature of corrosive attack of the solvent of heat-evolving elements permits a systematic approach to the selection of material, and to development of methods of corrosion protection of construction materials of solvent reactors. Orig. art. has: 17 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 16Apr63

DATE ACQ: 08Aug63

ENCL: 00

SUB CODE: PH

NO REF SOV: 018

OTHER: 011

Card 3/1

L 8485-65 EWT(m)/EPF(c)/EPR/EWP(q)/EWP(b) Pr-4/Ps-4 ASD(m)-3/ASD(f)/AFMJC
 MJW/JD/JW/HW/WB

ACCESSION NR: AP4043764

S/0080/64/037/008/1729/1736

AUTHOR: Mirolyubov, Ye. N.; Zhuk, L. M.; Kurtepov, M. M.

TITLE: The effect of ²⁷fluoride additions on the ¹⁸corrosion and electro-chemical behavior of ¹⁸stainless steels in nitric acid solutions ^B

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 8, 1964, 1729-1736

TOPIC TAGS: 1Kh18N9T, stainless steel, stainless steel corrosion, nitric acid corrosiveness, fluoride corrosiveness, steel electro-chemical behavior, cathodic process, anodic process, stainless steel electrochemical behavior

ABSTRACT: The effect of fluoride additions on the corrosion of the 1Kh18N9T stainless steel in nitric acid depends on several factors. Small additions of fluorides considerably accelerate the corrosion, especially in boiling acid. The maximum effect is achieved with the acid concentration below 10 m. In a stronger 24 m acid, the addition of fluoride may slow down the corrosion. At high temperatures, when fluorides stimulate the corrosion, the steel potential drops, but it remains unchanged when an increase in the fluoride content slows down

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L 8185-65

ACCESSION NR: AP4043764

the corrosion. The effect of fluorides appears to depend upon the amount of hydrofluoric acid molecules formed in the solution, which, in turn, depends upon the content of hydrogen ions. It appears that molecules of hydrofluoric acid stimulate the corrosion of steel in nitric acid, but fluoride ions slow it down. Hydrofluoric acid molecules have almost no effect on the cathodic process of nitric acid, but they stimulate the steel corrosion by intensifying the anodic process of dissolution of oxide films formed on the steel as a result of its oxidation. Orig. art. has: 9 figures and 2 tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AN SSSR)

SUBMITTED: 05Nov62

ATD PRESS: 3104

ENCL: 00

SUB CODE: MM, GC

NO REF SOV: 008

OTHER: 011

Card

2/2

L 5074-66 EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/ENP(t)/ENP(b) IJP(c) JD/WB/DM
 ACC NR: AP5022632 UR/0089/65/019/002/0153/0157
 620.193.4

AUTHOR: Kurtepov, M. M. 4.55

TITLE: Corrosion of the equipment made of stainless steel and used for concentration of evaporated radioactive solutions. 6

SOURCE: Atomnaya energiya, v. 19, no. 2, 1965, 153-157

TOPIC TAGS: corrosion resistant steel, nuclear fuel processing 19

ABSTRACT: The corrosion effects on the 18-8 chromium-nickel austenitic stainless steel are analyzed and discussed. This steel is used as a construction material for the equipment needed for the concentration of evaporated nitro-acid radioactive residue left from chemical reprocessings of nuclear fuel products. The effects of the concentration rate and of the temperature of HNO₃-solutions were evaluated on the basis of experimental results published in the author's preceding works. The corrosion rate depending upon the distribution of electrode potential in the boiling HNO₃-solution was reviewed. The accumulation of corrosion products and the formation of high valency ions (Fe³⁺, Cr⁶⁺, Mn⁷⁺) in the solution were discussed and graphically illustrated. The corrosion resisting properties of welding materials and the metal joining technique were also discussed. The effects of heat treatment on the

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ACC NR: AP5022632

corrosion properties were stressed. The protective measures against corrosion are briefly enumerated, including the decrease of evaporation temperature, the removal of ions of variable valency, the addition of corrosion inhibitors, the use of steel of a higher corrosion resistivity and the cathode protection. Finally, the author makes three brief conclusions, as follows: (1) The corrosion of steel in boiling HNO_3 -solutions (with an 8-16 M concentration) is characterized by a tendency towards abandoning the state of passivity at high positive potentials. (2) The accumulation of ions of a variable valency increases the rate of corrosion. (3) The corrosion of the 18-8 steel in boiling HNO_3 -solutions is of an intercrystal nature, while the welded steel joints are affected by the so-called concentrated or "knife-type" corrosion. Orig. art. has: 6 graphs and 1 photo (microstructure)

ASSOCIATION: None

SUBMITTED: 20Aug64

Encl: 00

SUB CODE: NP, GC

NO REF SOV: 008

OTHER: 000

Card 2/2 *md*

L 28403-66 EMT(m)/EMA(d)/EMP(t)/ETT IJF(c) JD/WB/ED

ACC NR: AT6013790 (N) SOURCE CODE: UR/0000/65/000/000/0103/0116

AUTHOR: Mirolyubov, Ye. N. (Candidate of chemical sciences) ; Kurtepov, M. M.

ORG: none

TITLE: Corrosion resistance of stainless steels in nitric acid solutions

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2
Moscow, Izd-vo Metallurgiya, 1965, 103-116

TOPIC TAGS: stainless chromium steel, corrosion resistance, nitric acid/Kh18N9
stainless steel, ¹Kh18N9T stainless chromium steel

ABSTRACT: The conditions under which the corrosion of stainless steels accelerates in nitric-acid media are examined in this literature survey in the light of the modern theories of metal corrosion and the kinetics of the reduction of nitric acid. It is shown that in HNO_3 solutions the relation of the corrosion rate of stainless steels to their potential follows the same general pattern as in other aggressive media. The normal hydrogen potential E_H of stainless steels exists in the passive-state region, and this accounts for their high corrosion resistance in most HNO_3 media. On disinhibition of the stage of chemical dissolution of the passive oxide film, e.g. by adding small amounts of HF to the solution, the corrosion rate of the

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ACC NR: AT6013790

steels in passive state in HNO_3 is high. For the steels in active and partially transpassivated states, corrosion in HNO_3 solutions may occur at faster rates when their E_H gets displaced from the region of passive state to negative values of cathodic polarization or by adding Cl^- ions to the solution. E.g. for steels of the Kh18N9 type the corrosion rate then reaches tens and hundreds of $\text{g}/(\text{m}^2\text{-hr})$. The observed increase in the corrosion rates of stainless steels in boiling $>6\text{-}8\text{M}$ HNO_3 solutions to which potent oxidizing agents are added, or on the accumulation of corrosion products in the acid and contact with metals (e.g. Pt) having a low over-voltage with respect to reduction of HNO_3 , is due to the displacement of the normal hydrogen potential E_H of the steel from the passive-state region to the repassivation region owing to the facilitation of the cathodic process, as confirmed by experiments with 1Kh18N9T steel. Orig. art. has: 6 figures

SUB CODE: 07, 11 SUBM DATE: 19Jul65/ ORIG REF: 026/ OTH REF: 028

Card 2/2 LC

L 28539-66 ENT(m)/EWA(d)/ENP(t)/ETI IJP(c) JD/WB/GD

ACC NR: AT6013806 (IV) SOURCE CODE: UR/0000/65/000/000/0315/0331

AUTHOR: Fokin, M. N.; Kurtepov, M. M.; Bochkareva, Ye. F.

ORG: none

TITLE: Investigation of the pitting and crevice corrosion of stainless steels in sea water

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2 Moscow, Izd-vo Metallurgiya, 1965, 315-331

TOPIC TAGS: stainless steel, chromium steel, corrosion, sea water corrosion, sodium chloride/Kh18Ni2M2T (EI-448) Cr-Mo steel, Kh18Ni2M3T (EI-432) Cr-Mo steel, Kh18 Cr steel, Kh17 Cr steel, Kh13 Cr steel, 18-8 stainless steel

ABSTRACT: This investigation was performed with the aid of a specially developed setup for potentiostatic polarization measurements of the electrochemical behavior of stainless steels in NaCl solutions simulating sea water (Fig. 1). In the electrolytic cells the experiments were performed on a rotating disk electrode, with Pt used as an auxiliary electrode. The electrode potential was measured with respect to a saturated calomel half-cell. With the aid of an electronic potentiostat specified values of the potential were assigned to the working electrode, after which

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ACC NR: AT6013806

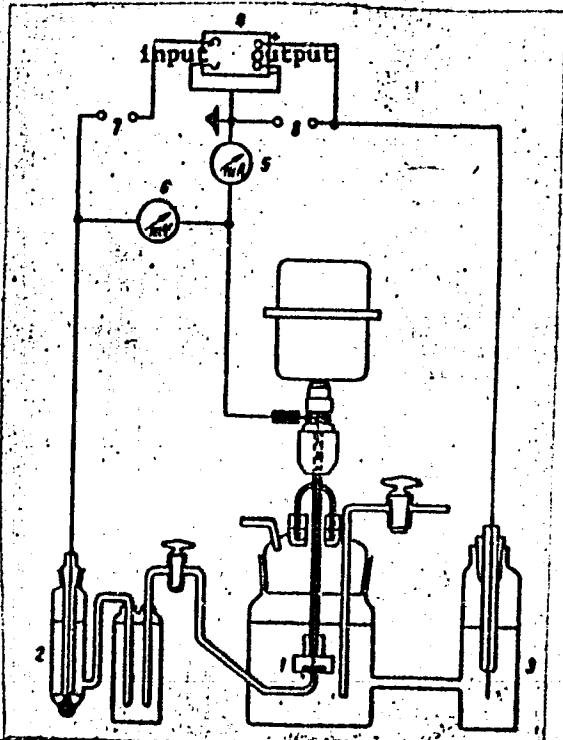


Fig. 1. Diagram of setup for potentiostatic polarization measurements of electrochemical behavior of stainless steels in NaCl solutions simulating sea water:

1 - working electrode; 2 - calomel half-cell; 3 - auxiliary Pt electrode; 4 - constant-voltage amplifier with feedback; 5 - multirange galvanometer; 6 - cathode voltmeter; 7 - compensation-unit terminals; 8 - counter-current-unit terminals

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ACC NR: AT6013806

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the intensity of the current passing through the electrolytic bath was determined. This made it possible to investigate the patterns of disturbances in the passivity of the steel specimens, leading to localized corrosion based on the mechanism of the pitting (anodic) and crevice (cathodic-acid) activation of the passive state of the investigated steels. It is shown that in such NaCl solutions the anodic disruption of passive state of steels of the Kh13 and Kh18 types owing to chemical polarization by the oxygen of air may already be achieved in the neutral solution (pH = 7); of steels of the 18-8 and Kh17 type, in weakly acid solutions (pH = 4); whereas for Kh18Ni12M3T (EI-432) and Kh28 steels, as well as for pure Cr, it is not achieved in sufficiently acid solutions (pH = 3), even on contact with Pt. Further, it is found that pure Cr and high-Cr Kh28 steel, which are highly corrosion-resistant in the event of anodic activation of passive state (pitting), display a low corrosion resistance in the event of cathodic-acid activation, i.e. crevice corrosion. The experiments also confirmed that, of the stainless steels investigated, the molybdenum steels Kh18Ni12M2T (EI-448) and Kh18Ni12M3T (EI-432) display the highest resistance to pitting and crevice corrosion in sea water. Orig. art. has: 12 figures

SUB CODE: 13, 11, 07, 11/ SUBM DATE: 19Jul65/ ORIG REF: 007/ OTH REF: 003

Card 3/3

L 28398-66 EWT(m)/EWA(d)/ENP(t)/ETI IJF(c) JD/WB/GD
 ACC NR: AT6013791 SOURCE CODE: UR/0000/65/000/000/0117/0122
 AUTHOR: Bozin, N. A.; Mirolubov, Ye. N. (Candidate of chemical sciences);
Kurtepov, M. M.
 ORG: none
 TITLE: Corrosion and electrochemical behavior of ØKh23N28M3D3T steel in boiling solutions of sulfuric acid
 SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2
 Moscow, Izd-vo Metallurgiya, 1965, 117-122
 TOPIC TAGS: stainless steel, corrosion, electrochemistry, sulfuric acid, chromium steel, nickel steel/ØKh23N28M3D3T stainless Cr-Ni steel, ØKh19N28M3D3T stainless Cr-Ni steel
 ABSTRACT: The steel with the highest resistance to corrosion in hot H₂SO₄ solutions at present is ØKh23N28M3D3T (EI-943) stainless Cr-Ni steel, which is recommended for use in H₂SO₄ solutions of any concentration at temperatures up to 80°C. Since, however, the corrosion and electrochemical behavior of stainless steels of the ØKh23N28M3D3T type in boiling H₂SO₄ solutions of relatively high concentrations (>20%) has not previously been investigated, the authors studied this question with the object of exploring the ways and means of inhibiting corrosion under such conditions. Specimens of these steels, with varying proportions of Cr and Ni, were sub-

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L 28398-66

ACC NR: AT6013791

jected to corrosion tests in glass flasks with reflux condensers following water quenching of the specimens from 1100°C. There was 10 cc of the solution per cm² of surface area of the specimens. The solution was replaced once every 10 hr of tests. The corrosion resistance of the steels was investigated over a broad range of potentials with the aid of an electronic potentiostat. Findings: in boiling H₂SO₄ solutions the corrosion rate of ØKh23N28M3D3T steel is relatively high and increases with increasing concentration of the acid (Fig. 1). For 40-50% H₂SO₄ the corrosion rate of this steel does not exceed 2-3 g/(m²-hr). For H₂SO₄ in concentrations exceeding 45% the corrosion rate sharply rises, reaching a maximum [~100-130 g/(m²-hr)] for the concentration of 60-70%, whereupon it somewhat decreases. In comparison, ØKh19N28M3D3T steel with its lower Cr content, displays a somewhat higher corrosion resistance than ØKh23N28M3D3T steel (Fig.1). The standard hydrogen scale potential of the corrosion of ØKh23N28M3D3T steel in boiling H₂SO₄ solutions exists in the potential range characteristic of active state. Hence ensue the possible methods of protecting it against corrosion under these conditions. Clearly, the corrosion resistance of this steel can be increased by alloying it with elements increasing this resistance in active state, such as Mo and Cu, increasing its Ni content, and reducing its Cr content (to not more than 19-20%). But this can also be accomplished without changing the composition of this steel -- by adding minute

Card 2/4

L 28398-66
ACC NR: AT6013791

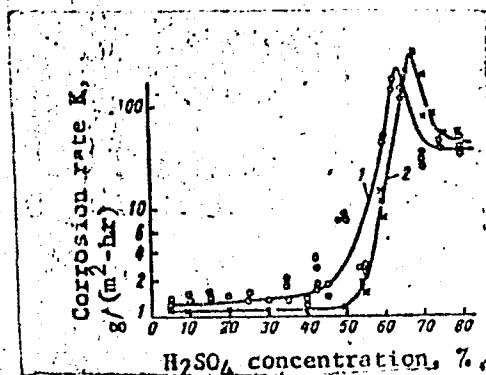


Fig. 1. Effect of the concentration of boiling solutions of H_2SO_4 on the corrosion rate of stainless steels:

1 - ØKh23N28M3D3T; 2 - ØKh19N28M3D3T

Card 3/4

L 28398-66

ACC NR: AT6013791

amounts of oxidizing agents, e.g. Fe^{3+} and HNO_3 or by cathodic or anodic protection due to the contact of this steel with other metals or steels with a more negative corrosion potential. Hence, stainless steels of the ØKh23N28M3D3T type can in a number of cases be used as structural material of apparatus handling boiling solutions of H_2SO_4 . Orig. art. has: 4 figures, 1 table

SUB CODE: 07, 11, SUBM DATE: 19Jul65/ ORIG REF: 016/ OTH REF: 015

Card 4/4 LC

L 128101-66 ENT(m)/EWA(d)/ENF(t)/ETI LIP(c) JD/IR/OD

ACC NR: AT6013795 (N) SOURCE CODE: UR/0000/65/000/000/0161/0165

AUTHOR: Kurtepov, M. M.; Bochkareva, Ye. F. 61
B+

ORG: none

TITLE: Effect of ozone on the corrosion of stainless steel in nitric acid solutions

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2
Moscow, Izd-vo Metallurgiya, 1965, 161-165

TOPIC TAGS: austenitic stainless steel, ozone, corrosion, nitric acid/1Kh18N9T
Cr-Ni austenitic stainless steel

ABSTRACT: While it is generally assumed that ozone, being a strong oxidizing agent (in the acid solution the redox potential of ozone is 2.07 v for the reaction $O_3 + 2H^+ + 2e = O_2 + H_2O$), affects markedly the corrosion of metals and alloys in HNO_3 , the literature contains little information on the effect of ozone on the corrosion and electrochemical behavior of metallic materials in aggressive media. In this connection, the authors investigated the effect of various concentrations of ozone on the corrosion of 1Kh18N9T and 18-8 Cr-Ni austenitic stainless steels in HNO_3 by blowing ozonized oxygen through the solution, with the plotting of polarization curves by the galvanostatic method, on referring all the potentials to the normal hydrogen electrode. It was found that in ozonized HNO_3 solutions with concentrations

Card 1/3

L 28401-66

ACC NR: AT6013795

of up to 70% at up to 100°C the corrosion of austenitic Cr-Ni steels at first passes through a minimum corresponding to ~20% HNO_3 due to the lower solubility of ozone in HNO_3 of this concentration, but subsequently it increases above normal, particularly in highly concentrated (>55%) HNO_3 solutions; this increase in corrosion rate is more marked when the ozone concentration in the solution is raised from 0.5 to 7%, particularly under the film of the acid solutions. To elucidate the mechanism of this effect of ozone, the electrochemical behavior of the steels was investigated. Findings: the increase in the temperature, ozone content, and concentration of HNO_3 solutions causes the normal hydrogen scale potential of the stainless steel to shift in the direction of much higher plus values (+1.25 v and higher), sufficient to disturb the passive state of the steel and thus to intensify the dissolution of the steel. Ozone is an effective depolarizer of the cathodic process and it facilitates this process; as a result, a weak anodic polarization -- which is the most dangerous from the standpoint of corrosion -- is observed (Fig. 1). Orig. art. has: 4 figures

Card 2/3

И 28401-66

ACC NR: AT6013795

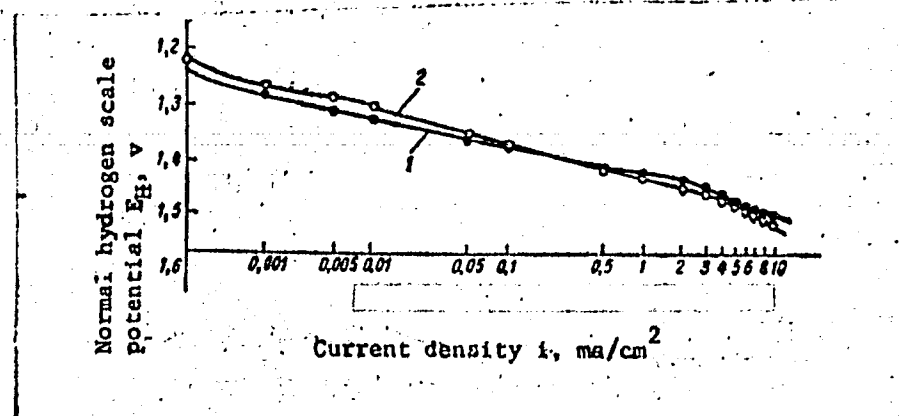


Fig. 1. Curves of the anodic polarization of 1Kh18N9T steel under a film of ozonized 55% HNO_3 at 20°C:
1 - 100 μ thick film; 2 - 300 μ thick film

SUB CODE: 07, 11. SUBM DATE: 19Jul65/ ORIG REF: 008/ OTH REF: 003

Card 3/3 LC

L 01092-67 EWT(m)/EMP(t)/EPI IJP(c) JD/WJ/JW/WB

ACC NR: AR6028438 SOURCE CODE: UR/0137/66/000/005/1065/1065

AUTHOR: Mirolubov, Ye. N. ; Kurtepov, M. M. 51

TITLE: Corrosion resistance of stainless steels in nitric acid solutions B

SOURCE: Ref. zh. Metallurgiya, Abs. 51449

REF SOURCE: Sb. Korroziiya met. i splavov. No. 2, M. Metallurgiya, 1965, 103-116

TOPIC TAGS: stainless steel, corrosion, corrosion resistance

ABSTRACT: It was shown that in nitric acid solution, the corrosion rate-potential ratio of stainless steels is of the same general type as in other destructive solvents. The conditions and instances of accelerated corrosion of stainless steels in nitric acid solutions due to changes in their passive state in the area of negative and positive potentials are studied. In active and partially passivated states, the stainless steel corrosion in nitric acid solutions may occur at a higher rate during the displacement of their stationary potential from the passive state towards negative cathode polarization values or by introducing Cl ions into the solution. Increased corrosion rate of stainless steels in boiling nitric acid solutions (over

Card 1/2

UDC: 669.15.018.8

L 01092-67

ACC NR: AR6028438

6—8 m) with additions of strong oxidizers during accumulation of corrosive products in the acid and in contact with the metal having a low reduction over-voltage for nitric acid is caused by displacement of the stationary potential of steel from an inert passive state into repassivation due to the alleviation of the cathode process. Authors' abstract. [Translation of abstract] [AM]

SUB CODE: 11/

Card 2/2

vlr

ACC NR: AT7004159 /N) SOURCE CODE: UR/0000/66/000/000/0027/0034

AUTHOR: Kurtepov, M. M. ; Fokin, M. N. (Candidate of chemical sciences);
Zhuravlev, V. K. ; Oreshkin, V. I.

ORG: none

TITLE: Comparative evaluation of the tendency of Kh18N10T and Kh17N13M3T
steels to pitting and crevice corrosion in sodium chloride solutions

SOURCE: AN SSSR. Institut fizicheskoy khimii. Korroziya i zashchita konstruk-
tsionnykh splavov (Corrosion and protection of structural alloys) Moscow, Izd-vo
Nauka, 1966, 27-34

TOPIC TAGS: corrosion, steel, sea water corrosion, pitting, crevice corrosion,
sodium chloride/Kh18N10T steel, Kh17N13M3T steel

ABSTRACT: A study of the relative propensities of Kh18N10T and Kh17N13M3T
steels to pitting and crevice corrosion in an aggressive medium, such as sea
water, showed that in the presence of narrow gaps Kh17N133T has a higher
resistance to crevice corrosion than Kh18N10T, which develops crevice corrosion
at a rate of 30—40 mm a year. Independent electrochemical analysis showed that

Card 1/2

UDC: 620.197.1:546.3.19

ACC NR: AT7004159

this corresponds to a pH value of approximately 1.5 within the gap. At 80 C, the oxidizing effect of an aerated sodium chloride solution is sufficient to generate and develop pitting in hot Kh18N10T or Kh17N13M3T steel pipes as a result of the action of microcouples or thermogalvanic macrocouples. Orig. art. has: 5 figures. [SP]

SUB CODE: 11, 13/SUBM DATE: 27Sep66/ORIG REF: 003/

Card 2/2

ACC NR: AT7004162

SOURCE CODE: UR/0000/66/000/000/0052/0057

AUTHOR: Kurtepov, M. M.; Volkova, T. V.

ORG: none

TITLE: Corrosion and electrochemical behavior of some metals and alloys solutions of hydrochloric acid at low temperatures

SOURCE: AN SSSR. Institut fizicheskoy khimii. Korroziya i zashchita konstruktsionnykh splavov (Corrosion and protection of structural alloys) Moscow, Izd-vo Nauka, 1966, 52-57

TOPIC TAGS: corrosion, corrosion resistance, corrosion protection, alloy steel, hydrochloric acid, nickel molybdenum alloy, steel/Kh23N28M3D3T steel, Kh18N12M3T steel

ABSTRACT: A study was made to determine the limits of stable passivity of nickel-molybdenum alloys and several other metals characterized by high corrosion resistance in hydrochloric acid solutions. The study showed that the corrosion resistance of nickel-molybdenum alloys NIMO-28 and NIKhMO-20-10 increases considerably below OC and their dissolution at stationary potentials

Cord 1/2

ACC NR: AT7004162

progresses slowly. The addition of chrome to nickel-molybdenum alloys increases their tendency toward passivity. At low temperatures, anodically polarized Kh23N28M3D3T and Kh18N12M3T steels have a wide range of passivity potentials in hydrochloric acid. At low temperatures, titanium and zirconium, just as tantalum, niobium, and molybdenum, are characterized by high corrosion resistance in 1—20% hydrochloric acid solutions. Orig. art. has: 4 figures and 1 table. [SP]

SUB CODE: 11/

Card 2/2

^{M)}
KURTES, Kosta, dr.

The significance of the brain concussion syndrome in estimation of working ability. Srpski arh. celok. lek. 82 no.7-8:974-979 July-Aug 54.

1. Neuroloska ambulanta Centralne specijalistice poliklinike N.O. Beograda, upravnik: dr. Danjan Vardic.

(BRAIN, wds. & inj.

concussion, evaluation of working ability after)

(WOUNDS AND INJURIES

brain concussion synd., evaluation of working ability after)

KURTES, Kosta M.

Experience in the treatment with Byk-Ml. Srpski arh. celok.
lek. 85 no.3:339-342 Mar 57.

1. Centralna specilaisticka poliklinika u Beogradu. Upravnik:
dr. Damjan Vardic.
(MEPHENESINE, ther. use
indic. (Ser))

KURTES, K. M.

A case of paroxysmal paralysis with mental changes. Neuropsihijatrija
9 no.2/3:231-235 '61.

1. Centralna specijalistica poliklinika -- Beograd (Upravnik dr
Dura Milosevic).
(PARALYSIS SPASTIC compl) (MENTAL DISORDERS)

KURTES, Kosta M., dr.

Effect of amegiasis on the autonomic nervous system. Med. glasn. 15
no.11:402-405 N '61.

1. Centralna specijalisticka poliklinika grada Beograda (Upravnik:
dr D. Milosevic).

(AUTONOMIC NERVOUS SYSTEM dis) (AMEBIASIS compl)

KURTES, Kosta, dr.

Basic concepts of psychotherapy. Med.Glas.17 no.11/12:449-451 N-D '63.

1. Centralna specijalisticka poliklinika, Beograd (Upravnik: dr. R. Stankovic).

KURTESOV, A.P., kand. sel'khoz. nauk

Effect of organic-mineral fertilizers on Chernozem soils of
the Ob'Valley forest-steppes. Agrobiologiya no.5:718-727 S-0
'61. (MIRA 14:10)

1. Altayskiy nauchno-issledovatel'skiy institut sel'skogo
khozyaystva, g. Barnaul.

(Ob'Valley--Chernozem soils)
(Fertilizers and manures)

KURTESOV, A.P., kand.sel'skokhozyaystvennykh nauk

Conversion of phosphorous contained in organic-mineral fertilizers
and superphosphates. Zemledelie 24 no.2:63-67 F '62.

(MIRA 15:3)

1. Altayskiy nauchno-issledovatel'skiy institut sel'skogo
khozyaystva.

(Phosphates)

KURTESOV, A.P., kand. sel'skokh. nauk

Organic-mineral fertilizers and the technique of their application. Zemledelie 25 no.6:64-67 Je '63. (MIRA 16:7)

1. Altayskiy nauchno-issledovatel'skiy institut sel'skogo khozyaystva.

(Siberia, Western—Fertilizers and manures)

KURTEV, A.

KURTEV, A. Standards for doors and windows. p. 37.

Vol. 6, No. 6, June 1956.

RATSIONALIZATSIYA

TEKHNOLOGIYA

Sofia, Bulgaria

So: East European Accession, Vol. 6, No. 2, Feb. 1957

KURTEV, Al., arkh.

Double and glued windows for the dwellings and public buildings.
Ratsionalizatsiia no.5:28-29 '62.

KURTEV, B. [I.]
CA

/0

The attempted cyclization of the phenylhydrazides of β -hydroxy carboxylic acids to 1-phenyl-3-pyrazolidones. (unpublished work - Aleksandr Spasov and Bogdan Kurtev. - *Annales de Sofia, Faculté phys.-math.* 43, Livre 2, 37-51 (1946-1947).) - When the phenylhydrazides of $\text{MeCH(OH)CH}_2\text{CO}_2\text{H}$, $\text{EtCH(OH)CHMeCO}_2\text{H}$, $\text{PrCH(OH)CH}_2\text{CO}_2\text{H}$, $\text{EtCH(OH)CHPhCO}_2\text{H}$, $\text{PrCH(OH)CHPhCO}_2\text{H}$, and $\text{PhCH(OH)CHPhCO}_2\text{H}$ are heated with 5% or 13% HCl they are hydrolyzed to the acid and PhNHNH_2 . Under these conditions, $\text{MeCH(OH)CHPhCO}_2\text{H}$ and $\text{Ph(PhCH}_2\text{)-C(OH)CH}_2\text{CO}_2\text{H}$ phenylhydrazides are only partly hydrolyzed. $\text{PhCH(OH)CH}_2\text{CONHNHPh}$ gives 1,5-diphenyl-3-pyrazolidone, m. 160-61°, which is also obtained from $\text{PhCH(Ph)CH}_2\text{CO}_2\text{H}$ and PhNHNH_2 . $\text{PhCH(OH)CHMeCONHNHPh}$ gives some 1,5-diphenyl-4-methyl-3-pyrazolidone, m. 164-5°, and also partly hydrolyzes. $\text{Ph}_2\text{C(OH)CH}_2\text{CONHNHPh}$ gives 1,5-diphenyl-3-methyl-3-pyrazolidone, m. 170-1°, and $\text{MePhC(OH)CHMeCONHNHPh}$ gives 1,5-diphenyl-4,5-dimethyl-3-pyrazolidone, m. 220.5-2°. Thus for cyclization to occur, there must be a β -Ph group. α -Me groups make cyclization difficult, and α -Ph groups prevent it, as do β -alkyl groups. H. M. Leicester

KURTEV, B. [I.]

10

The reaction of phenylhydrazine with β -hydroxy carboxylic acids. II. Aleksand'r Spasov and Bogdan Kurtev. *Annuaire univ. Sofia, Facult. phys.-mat.* 43, Livre 2, 147-62 (1946-1947); cf. *C.A.* 38, 2131. — Most β -HO carboxylic acids form phenylhydrazides with Ph-NHNH₂ (I), but in a side reaction I decomp. to C₆H₅-PhNH₂, NH₃, and N₂, and sometimes this reaction prevents detection of the phenylhydrazides. Ph₃C(OH)CO₂H and I form the salt, m. 63-8°, at room temp. When heated at 140-5° they give 46% of the phenylhydrazide, m. 73-6°. NH₃ and PhNH₂ are found in the mixt. Ph₃C(OH)C(OH)CH₂CO₂H (II) and I form the salt, m. 103-7°, and on heating give the phenylhydrazide, m. 146-7.5°, as well as the NH₃ salt, m. 163-5°, and the PhNH₂ salt, m. 121.5-3.5°, of II. MeCH(OH)CHMeCO₂H and I give only the phenylhydrazide, m. 147.5-8°. EtCH(OH)CHMeCO₂H gives 35-6% of its phenylhydrazide, m. 101-1.5°. Me₂C(OH)CHMeCO₂H gives its I salt, m. 110.5-11.5°, and from the reaction mixt. only the NH₃ salt, m. 183-3.5°. MeEtC(OH)CHMeCO₂H gives no definite products. MePhC(OH)CHMeCO₂H, m. 65-7°, gives the I salt, m. 133-3.5°, NH₃ salt, m. 100° (decomp.), PhNH₂ salt, m. 116-17°, and phenylhydrazide, m. 184-41°. Me-(p-MeC₆H₄)C(OH)CHMeCO₂H gives the I salt, m. 125.5-6°, and the NH₃ salt, m. 173-3° (decomp.). PhC(OH)CHMeCO₂H gives only decompn. products of I. Ph₃C(OH)CHPhCO₂H gives only PhCH₂CONHPh, m. 117°.

H. M. Leicester

KURTEV, B. I.

"Propagation of the Synthesis of Beta-amino Acid to Alpha- and beta-Naphthaldehyde,"
reported on by the young Bulgarian scientist Aspirant B. I. Kurtev. This work
was conducted under the guidance of Acad. V. M. RODIONOV.

SO: Vestnik Akad. Nauk SSSR, #5, 1950

Kurlov, B. I.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

② Chem
~~8-Amino-2-naphthalenecarboxylic acid and its pyridine~~
~~derivatives. B. V. M. Rodionov and B. I. Kurlov.~~
~~Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci. 1952, 287-91.~~
~~(Engl. translation).—See C.A. 47, 4320f. H. L. H.~~

RODIONOV, V.M.; KURTEV, B.I.

Synthesis and characterization of amino-2-naphthalene-propionic acid and some of its derivatives. Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci. '52, 123-30 [Engl. translation].
(CA 47 no.19:9912 '53)

RODICNOV, V. M.: KURTEV, B. I.

Amino Acids

Synthesis and identification of B-(B-naphthyl)-B-aminopropionic acid and of some of its derivatives. Part 1. V. M. Rodionov, B. I. Kurtev. Izv. AN SSSR. Otd. khim. nauk No. 1 1952.

Monthly List of Russian Accessions, Library of Congress, September 1952, UNCLASS.

KURTEV, B. I.,: RODIONOV, V. M.

Amino acids

B-(B-Naphthyl)-B-aminopropionic acid and its pyrimidine derivatives. Part 2. Izv.
AN SSSR Otd. khim. nauk no. 2, March-April 1952

9. Monthly List of Russian Accessions, Library of Congress, August ¹⁹⁵²~~1951~~, Uncl.

B. KURTEV, B.

13

A new synthesis of β -anilino acids (preliminary publica-
tion). B. Kurtov and St. Popov. *Compt. rend. acad.*
bulgare sci. 40 (Pub. 1961) (German summary).—By
treating isopropylidene anil (I) and benzylidene anil (II),
resp., with the complex $\text{C}(\text{Mg})\text{CHPhCO}_2\text{Na}$ (III) 2 new β -
anilino acids were prepd.: α -phenyl- β -anilino- γ -methyl-
valeric acid, m. 152-3° (decompn.) (from Calt-petr. ether)
and α -phenyl- β -anilino- γ -hydrocinnamic acid, m. 157-8° (de-
compn.) (from Calt-petr. ether). Both acids are cryst.,
colorless, sol. in alkali, concd. HCl, Calt. alc., Et₂O;
slightly sol. in water, petr. ether. Gerard Aufleger

CH
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KURTEV, B. I.

The ethyl ester of α , β -diphenyl- α -nitroacrylonitrile acid obtained from benzalaniline and ethyl phenylacetate in the presence of anhydrous aluminum chloride. B. I. Kurtev and N. M. Mollov. *Chem. Acad. Bulg. Rep.* No. 4, 21-4 (1955) in Russian (German summary); cf. C.A. 51, 3416. — Further exptl. data are presented to clarify the structures of the title compd. (I) and its free acid (II). Treatment of I with HNO₃ at 2-3° 5 min. gave a nitroso compd. which analyzed correctly for EtO₂CCHPhCHPhN(NO)Ph, m. 102-3°; esterification of the Ag salt of II with EtBr gave I; HCl salt of I was unstable; decarboxylation of II with Ac₂O yielded 45% *trans*- α -phenylacrylamide acid and MeCONHPh; H₂O and I yielded 30% EtO₂CCHPhCHPhN(Bz)Ph, m. 173-3.5° (EtOH); finally, pyrolysis of I 15 min. at 250° produced benzalaniline and EtO₂CCH₂Ph.

G. H. M.

KURTEV, B. Y.

USSR/ Chemistry - Synthesis methods

Card 1/1 Pub. 22 - 24/47

Authors : Kurtev, B. Y., and Mollov, N. M.

Title : Synthesis of esters of alpha-phenyl-beta-aryl-beta-anilinopropionic acids from Schiff bases and ethylphenylacetate in the presence of anhydrous AlCl₃

Periodical : Dok. AN SSSR 101/6, 1069-1072, Apr. 21, 1955

Abstract : The synthesis of ethyl esters of alpha, beta-diphenyl-beta-anilinopropionic acid and alpha-phenyl-beta-(beta-naphthyl)-beta-anilinopropionic acid from benzylidene, respectively, and beta-naphthylideneaniline and equimolecular amounts of ethyl phenyl acetate (Schiff's bases), is described. The reaction was carried out in a nondehydrated benzene medium with AlCl₃ as the catalyst. It was found that the catalyst amount has no effect on the ester yield and an amount smaller than 0.5 moles per mole of basic substance often leads to resinification. Nineteen references: 6 German, 5 USSR, 2 English and 6 USA (1892-1954).

Institution : State University, Sofiya, Bulgaria

Presented by: Academician I. N. Nazarov, November 3, 1954

KURTEV, B. I.

USSR/Chemistry - Synthesis

Card 1/1 Pub. 22 - 25/59

Authors : Mollov, N. M., and Kurtev, B. I.

Title : Synthesis of alpha-phenyl-beta-aryl-beta-aminopropionic acid esters from hydramides and ethylphenylacetate in the presence of anhydrous AlCl₃

Periodical : Dok. AN SSSR 102/2, 287-290, May 11, 1955

Abstract : Experimental data are presented regarding the synthesis of alpha-phenyl-beta-ary-beta-aminopropionic acid esters from hydramides and ethylphenylacetate over an anhydrous aluminum chloride catalyst. It was established that hydramides also react with ethyl acetate over an anhydrous AlCl₃ in a nondehydrated benzene medium. The products obtained from this last reaction are described. Six references: 2 USSR, 1 USA, 1 Ger and 2 Bulg. (1912-1955).

Institution : Sofia State University, Sofia, Bulgaria

Presented by: Academician I. N. Nazarov, November 3, 1954

KURTEV, B.; MOLLOV, H.

Synthesis of ester of α -phenyl- β -aryl- β -amino propionic acids from Schiff's bases or hydramines and ethyl phenylacetal in presence of anhydrous aluminum chloride.

p. 411 (Izvestia) Vol. 4, 1956. Sofia, Bulgaria.

SO: Monthly Index of East European Accessions (MEEA) 13, Vol. 7, No. 1, Jan. 1958

KURTEV, B

KURTEV, B Dimitrova, N. Structure and properties of 2-thiohydrouaclis. 1.
Interaction of 2-thiohydrouaclis with monochloro acetic acid. In
Russian. p.31

Vol. 9, no. 2, Apr./June 1956

DOKLADY

SCIENCE

Sofia, Bulgaria

SO: East European Accession, Vol. 6, No. 3, March 1957

Chlorosulfonic and sulfamide derivatives of 6-phenyl-
dihydrouracil B. I. Kurtev and R. Galovinski. *Compt.
rend. acad. bulgare sci.* 11: 883-4 (1958) (in German). — Well-
dried and powd. 6-phenylhydrouracil (3.80 g.) heated
with occasional shaking with 7.0 ml. ClSO_3H at 60-65°
2 hrs., dild. with ice and filtered gave 6.60 g. crude 6-(*p*-
sulfochlorophenyl)dihydrouracil (I), m. 120-136°; *S*-
benzylthiuronium salt m. 239.5-41.5° (EtOH). Heating
0.72 g. I with 1.20 g. dry $(\text{NH}_4)_2\text{CO}_3$ at 100° 1 hr. gave 6-
(*p*-sulfamidophenyl)dihydrouracil (II), m. 266-7°. Heating
0.41 g. II with 0.79 g. KMnO_4 in 10 ml. 3.5% NaOH at 100°
0.5 hrs. gave 0.20 g. *p*-sulfamidobenzoic acid, m. 272-3°.
I (1 g.) heated with 0.64 g. PhNM_2 at 100° 1 hr. gave 6-
(*p*-sulfamidophenyl)dihydrouracil, m. 236.5-7.5°.
O. H. W.

2 May

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KURTEV, B

The interaction of 2,4-dioxo-1,2,3,4-tetrahydropyridines with bromine in alcoholic solution. III. The structure and some conversions of bromohydroxydihydrothymine 7 and bromoalkoxydihydrothymine. Khr. Dimitrov and B. Kurtev. *Compt. rend. acad. bulgare sci.* 11, 497-500 (1953) (in Russian) (German summary); cf. C.A. 49, 7574b.—The structure of 5-bromo-6-hydroxydihydrothymine (I) was proved by conversion to 5-bromo-5-methylbarbituric acid with KMnO_4 (yield 23%). I was converted into its Et ether (yield 56%). The Me and Et ethers of I were changed to thymine by HCl , HBr , and NaOH . I was also hydrolyzed to thymine by HCl and HBr . A mechanism for this change was proposed. The Me ether of I was converted into bis(6-methoxydihydro-5-thymyl) ether in 90% yield, m. 203-4° (decompn.), and into 6-cyano-6-methoxydihydrothymine in 49% yield, darkened at 280°, m. 300° (decompn.).

M. J. Newlands

5(3)

AUTHORS:

Kurtev, B. Y., Mollov, N. M.,
Simova, Ye. M.

SOV/62-59-4-41/42

TITLE:

Configuration of α, β -Diphenyl- β -Anilinepropionic Acids (Konfiguratsiya α, β -difenil- β -anilinopropionovyykh kislot)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, p 758 (USSR)

ABSTRACT:

In this letter to the editor the authors write: "In the work on the synthesis of 2,3-diphenyl-3-methylaminopropionic acid (Ref 1) the intention was expressed of investigating the configuration of β -amino acids obtained from the Schiff's bases and arylacetic acids. We investigate this question. In the alkali hydrolysis of the ethyl ester of α, β -diphenyl- β -anilinepropionic acid which was obtained from benzalaniline and ethylphenylacetate in the presence of anhydrous aluminum chloride (Ref 2) we previously separated a single free β -aniline acid with the melting point $171-172^{\circ}$ (I). According to the configuration it corresponds to the initial ester (Ref 3). Now we have also separated the second racemate with the melting point $157-158^{\circ}$ (II). This is identical with the α, β -diphenyl- β -anilinepropionic acid obtained from benzal-

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Configuration of α,β -Diphenyl- β -Anilinepropionic Acids SOV/62-59-4-41/42

aniline and metal-organic phenylacetatic acid derivatives (Ref 4-6). In alkali medium, (II) and benzene sulfochloride give a 89 % 1,3,4-triphenylasetidinone-(2) yield (Ref 7) as is confirmed by us. It did not prove successful to obtain lactam from (I) in the same way. We separated up to 90 % of the initial acid from the reaction medium. Since the β -lactam formation by this method has to be a cis-cyclization it may be assumed on account of the conformation assumptions (e.g. Ref 8) that (I) has erythro- and (II) treo-configuration." There are 8 references, 3 of which are Soviet, 4 Bulgarian and 1 English.

ASSOCIATION:

Sofiyskiy gosudarstvennyy universitet (Sofia State University)

SUBMITTED:

January 17, 1959

Card 2/2

KURTEV B. I.

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2.8.10 (10.10)
4.8.10 (10.10)
9.9

Yesters of α , β -diaryl- β -aminoacrylic acids from Schiff bases and arylacetic esters in the presence of aluminum chloride. B. I. Kurtev and N. Melov. Acta. Chim. Acad. Sci. Hung. 18, 429-35 (1959) (in German).—A discussion of the prepn. of $R'NHCHArCHAr'CO_2R$ from the reaction of $R'N:CHAr$ and $Ar'CH_2CO_2R$ in the presence of $AlCl_3$. The Schiff bases can be replaced by $ArCH:NCHArN:CHAr$.
Millard Malenthat

KHAIMOVA, M.A.; KURTEV, B. I.

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iodomonochloride and rearrangement of the pinacolin type of their
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khim 54 no.3:1-37 1959/60 (pub. '61.) (EEAI 10:9)

(Ethylene compounds) (Carbohydrates) (Pinacolone)
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(EEAI 10:5)

(Bulgaria--Chemistry)

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(Czechoslovak Academy of Sciences)

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(EEAI 10:9)

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Dokl. AN SSSR 143 no.6:1374-1377 Ap '62. (MIRA 15:4)

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in the Rodionov reaction. Doklady BAN 16 no.1:65-68 '63.

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Synthesis and separation of *l*-menthyl ester of the 3-amino-
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diaphyseal (Bul))

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Study of a digital device for measuring a ratio logarithm.
Trudy VZEI no.18:11-31 '61. (MIRA 17:1)

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Analysis of a transient process in an amplifier-limiter.
Trudy VZEI no.18:55-60 '61. (MIRA 17:1)

20039

S/146/61/004/001/003/016
B104/B215

9.7100

AUTHORS: Kurtev, N. D., Svet, D. Ya.

TITLE: Digital instrument for measuring the logarithms of ratios

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye,
v. 4, no. 1, 1961, 23-30

TEXT: The authors investigated variants of circuits allowing the calculation of a logarithm of the ratio between two physical quantities according to D. Ya. Svet's method of logarithmic amplitude-time transformation. An RC-circuit with following amplitude comparator in this method plays the role of a functional and time converter. First it is shown that the error occurring in the reproduction of the ratio between two signals until the functional converter is reached, is lower than the required measuring error of the logarithm of the ratio, when $D < e$. $D = U_1/U_2$ is the actual ratio. Furthermore, the error in a logarithmic amplitude-time conversion is shown to be a constant for a random value of the quantity to be converted. This method therefore is very

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Digital instrument for measuring ...

sensitive to changes in the amplitudinal ratio, and can thus be used for the determination of very small, non-linear distortions. It is known that the logarithm of a ratio can be calculated in two ways: in the first method, the logarithm of the ratio is directly calculated from the ratio value; in the second one, the logarithms of the two quantities are determined and subtracted from each other. The first method requires a memory element until the two amplitudes are compared, the second one requires a memory after the logarithmic block. The two methods are discussed in detail with the block diagrams of Figs. 2 and 3. If the first method is used, a memory in the amplitude range is required; in the second method a memory in the range of time, or in the form of a numerical equivalent is necessary. The block diagram of Fig. 3 computes the logarithm of a ratio by the second method, and has a memory in the range of time. The block diagram of Fig. 5 also applies the second method, but has a memory in the form of a numerical equivalent. This second variant is simpler in its structure and easier to be operated. The publication of this article was recommended by the Kafedra radiopriyemnykh i radiopere dayushchikh ustroystv (Department of Radio

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B104/B215

Digital instrument for measuring ...

Receiver and Transmitter Units). There are 5 figures and 6 references:
2 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy zaochnyy energeticheskiy institut (All-Union
Correspondence Institute of Power Engineering)

SUBMITTED: June 9, 1960

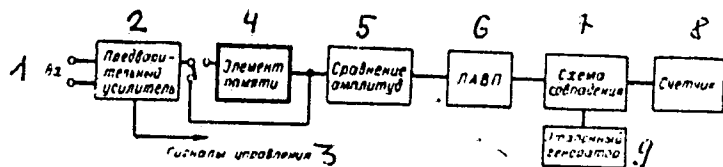


Рис. 2. Блок-схема устройства, использующего первый способ вычисления логарифма отношения

Кроме того, известны в области вычисления логарифма отношения

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Digital instrument for measuring ...

Legend to Fig. 2: block diagram calculating the logarithm of a ratio according to the first method, 1) input, 2) pre-amplifier, 3) control signal, 4) memory element, 5) amplitude comparison, 6) logarithmic amplitude-time converter, 7) coincidence circuit, 8) counter, 9) standard generator.

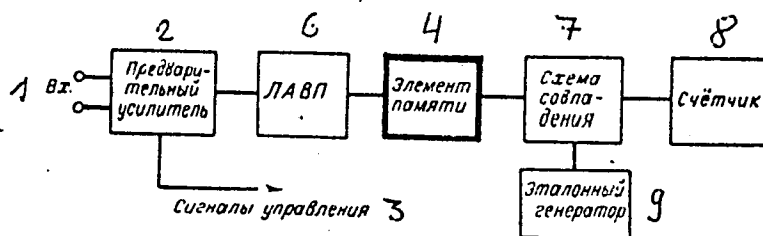


Рис. 3. Блок-схема устройства, использующего второй способ вычисления логарифма отношения, с элементом памяти в области времени

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Digital instrument for measuring ...

Legend to Fig. 3: block diagram of a measuring circuit following the second method of calculating the logarithm of a ratio, with a memory in the range of time. Designations as in Fig. 2.

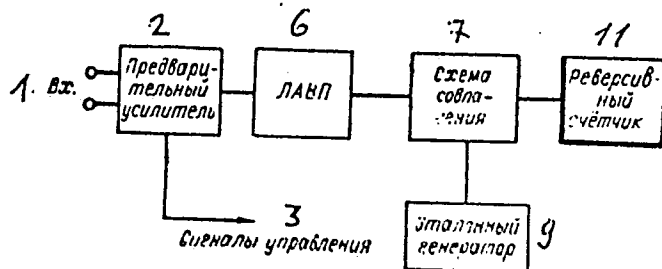


Рис. 5. Блок-схема устройства, использующего второй способ вычисления логарифма отношения, с элементом памяти в виде числового эквивалента

Минимальная длительность периода следования импульсов

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Digital instrument for measuring ...

Legend to Fig. 5: block diagram of a circuit calculating the logarithm of a ratio according to the second method, with a memory in the form of a numerical equivalent, 11) reversive counter. All other blocks same as in Figs. 2 and 3.

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AUTHORS: Kurtev, N. D., Svet, D. Ya.

TITLE: Investigation of the errors of a digital ratio-logarithm meter

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye,
v. 4, no. 2, 1961, 43-51

TEXT: For the automatic digital ratio-logarithm meter described, a variant of the solution by means of a memory element in the form of a digital equivalent is used. The block diagram of the device and the time diagrams of the individual blocks are given in Figs. 1 and 2. The impulse signals from the pickup D are amplified by means of the pre-amplifier block Y and led to the input of block ЛАП, which consists of the logarithmation device (circuit RC), the amplitude comparator Kam which sends out signals at the moment of reaching the exponential voltage U_0 , as well as an input counting key. From the comparator, the input counting signals are led over the phase chain 3, and the output counter signals directly to the impulse generator block 60, the signals of which are time-modulated, and then further to the input counter key and the matching scheme CC. The phase

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Investigation of the...

chain is used for reaching a counter input synchronous with f_{st} and input impulses of various duration; for the same reason a peak detector not shown in the figure is used between the pre-amplifier block and ЛАП. The standard frequency impulses of the generator Г serve as counting impulses as well as for the synchronization of the start of every interval read. Periodically consecutive counting impulse series and impulses regulated by the counter (zero projection, summing- and subtracting signal, signal for transmitting the measurement result to the counting device СВ) are led into the reverse counter РС. A variant of the device without input counter key with "a.c." pre-amplification by means of the ЛАП (without key К and block 3) is also possible. The pre-amplifier, the detector before the key and the amplitude-time converter can be considered as error sources during logarithmation. For subtracting the logarithms, however, the standard-frequency generator and the time lag of the counter output can be considered as error sources, as well as the error caused by the final value of the front of the impulse-chain gradient, which participates in the transmission of the output counter signal, and the instability of block 5Ф. The measurement errors can be divided into those causing systematic errors and those causing random errors (instability errors). Due to the non-linearity

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Investigation of the...

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of the amplitude characteristic of the pre-amplifier, a systematic error is introduced into the ratio of two signals which are led into the logarithmic amplitude-time converter. The correlation between the error of the ratio of two values and the value of the non-linear distortions is investigated for the case that the amplitude characteristic of the pre-amplifier can be determined accurately enough by means of the first three links of a Taylor series. For the error in measuring the ratio, the correlation $\Delta_\gamma = 2\gamma_1 \cdot (D-1)/(D-2\gamma_1)$ is obtained, where γ_1 is the coefficient of the non-linear distortions of the greater value and $D = U_1/U_2$. The error caused by the non-linearity of the pre-amplifier does not affect the accuracy of measuring the ratio logarithm, in any case not for $\gamma_1 \leq \Delta/2$. It is shown by calculations that the error introduced by the pre-amplifier block can practically be neglected, even for $F=3$ and $\epsilon_1=6$ (F is the impulse gap of the amplified impulses of same duration as the amplitudes of the measured ratio, and ϵ_1 the duration of the impulses in units of the time constant of the transition circuit). In the given case the peak detector acts as a memory, delaying the amplitude value up to the start of counting; with its aid the start of counting can be synchronized with one

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Investigation of the...

of the standard-frequency impulses, and measuring impulses of various duration can be used. An error is only possible if the time T_i' between the end of the first impulse and the start of its being counted, and the time T_i'' for the second impulse differ. In this case the relative measuring error of the ratio is $\Delta = \pm \partial T / \tau_{\text{det}}$, where $\partial T = T_i'' - T_i'$ and $\tau_{\text{det}} = R_s C_{\text{det}}$ (R_s is the leakage resistance). The admissible difference between T_i' and T_i'' can be determined; in the given case the error is of arbitrary as well as systematic nature. The "calibration error" can be considered as being a systematic error introduced by the logarithmic amplitude-time converter block; the random errors are instability with respect to time of the comparison level U_0 and the time constant τ . The error for measuring the time proportional to the logarithm of the ratio during the subtraction of logarithms can be composed of the error of determination of the individual times proportional to the logarithms of the compared values, and depends on the instability and inaccuracy of the standard-generator frequency and the delay with respect to time of the end of counting in impulse circuits. The error ϵ_η introduced into the measurement of the difference with respect to time through the instability and inaccuracy of the standard generator,

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Investigation of the...

is given by the correlation $\epsilon_{\eta} = \sqrt{2} \cdot \eta$, where the correlation $\eta = f_{st} \cdot \hat{\eta}$ holds for the stability coefficient of the standard generator ($\hat{\eta}$ is the deviation from the standard frequency because of inaccuracy or instability). When using d.c. circuits in the ЛАБП, an error is introduced which is connected with the level drift in these circuits. The latter affects the calibration stability of the device for a length of time. The device, the diagram of which is given in Fig. 3, was elaborated for the investigation. In contrast to the device used so far, the block П is used in this device, which passes two adjacent time-modulated impulses and divides them into two matching schemes. The measurement result is obtained by subtraction of the computer readings. Devices of the type "ФЛОКС" ("Flocks") were used as computers and the length of every individual impulse was determined. The scheme described permits a measurement accuracy for the logarithm of the minimum ratio $D_{\min} = 1.4$ of at least 0.2 % for short time intervals and a reading time of 0.04 sec. The measurement accuracy is of course increased when the same measurements are repeated. The reading accuracy of the device in a longer time interval is determined by the drift of the d.c. circuits, e.g., in the ЛАБП, and that of the peak detector. A system

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